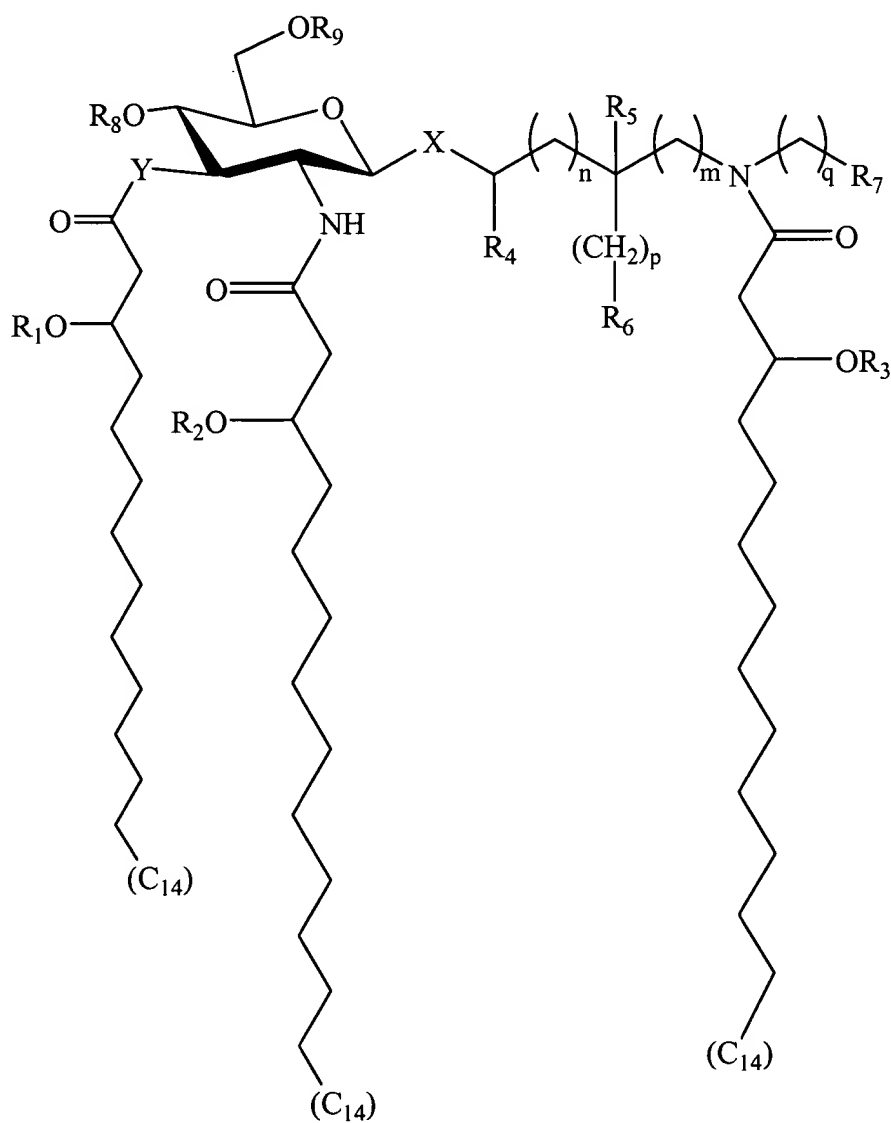


**Listing of Claims:**

1.(currently amended) ~~An immunoeffector~~ A pharmaceutically acceptable salt of a  
compound having the following structure:



wherein, X is selected from the group consisting of O and S at the axial or ~~equatorial~~ equatorial position; Y is selected from the group consisting of O and NH; n, m, p and q are integers from 0 to 6; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are the same or different and are ~~normal~~ fatty acyl residues having from 1 to about 20 carbon atoms and where one of R<sub>1</sub>, R<sub>2</sub> or R<sub>3</sub> is optionally hydrogen; R<sub>4</sub> and R<sub>5</sub> are the same or different and are selected from the group consisting of H and methyl; R<sub>6</sub> and R<sub>7</sub> are the same or different and are selected from the group consisting of H, hydroxy, alkoxy, phosphono, phosphonooxy, sulfo, sulfooxy, amino, mercapto, cyano, nitro, formyl and carboxy, and esters and amides thereof; and R<sub>8</sub> and R<sub>9</sub> are the same or different and are selected from the group consisting of phosphono and H, and at least one of R<sub>8</sub> and R<sub>9</sub> is phosphono.

2.(currently amended) The ~~compound~~ salt of claim 1, wherein R<sub>6</sub> is carboxy.

3.(currently amended) The ~~compound~~ salt of claim 2, wherein X is O; Y is O; n, m, p and q are 0; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 10 carbon atoms; R<sub>4</sub>, R<sub>5</sub> and R<sub>7</sub> are H; R<sub>8</sub> is phosphono; R<sub>9</sub> is H; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration; and R<sub>5</sub> is attached to a stereogenic center having an *S* configuration.

4.(currently amended) The ~~compound~~ salt of claim 2, wherein X is O; Y is O; n, m, p and q are 0; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 12 carbon atoms; R<sub>4</sub>, R<sub>5</sub> and R<sub>7</sub> are H; R<sub>8</sub> is phosphono; R<sub>9</sub> is H; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration; and R<sub>5</sub> is attached to a stereogenic center having an *S* configuration.

5.(currently amended) The ~~compound~~ salt of claim 2, wherein X is O; Y is O; n, m, p and q are 0; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 10 carbon atoms; R<sub>4</sub>,

R<sub>5</sub> and R<sub>7</sub> are H; R<sub>8</sub> is phosphono; R<sub>9</sub> is H; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration; and R<sub>5</sub> is attached to a stereogenic center having an *R* configuration.

6.(currently amended) The ~~compound~~ salt of claim 2, wherein X is O; Y is O; n, m, p and q are 0; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 8 carbon atoms; R<sub>4</sub>, R<sub>5</sub> and R<sub>7</sub> are H; R<sub>8</sub> is phosphono; R<sub>9</sub> is H; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration; and R<sub>5</sub> is attached to a stereogenic center having an *S* configuration.

7.(currently amended) The ~~compound~~ salt of claim 1, wherein R<sub>6</sub> is H.

8.(currently amended) The ~~compound~~ salt of claim 7, wherein X is O; Y is O; n is 2; m, p and q are 0; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 14 carbon atoms; R<sub>4</sub>, R<sub>5</sub> and R<sub>7</sub> are H; R<sub>8</sub> is phosphono; R<sub>9</sub> is H; and R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration.

9.(currently amended) The ~~compound~~ salt of claim 7, wherein X is O; Y is O; n is 1, m and p are 0; q is 1; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 10 carbon atoms; R<sub>4</sub> and R<sub>5</sub> are H; R<sub>7</sub> is carboxy; R<sub>8</sub> is phosphono; R<sub>9</sub> is H; and R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration.

10.(currently amended) The ~~compound~~ salt of claim 7, wherein X is O; Y is O; m, n, p and q are 0; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 14 carbon atoms; R<sub>4</sub>, R<sub>5</sub> and R<sub>7</sub> are H; R<sub>8</sub> is phosphono; R<sub>9</sub> is H; and R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration.

11.(currently amended) The ~~compound~~ salt of claim 7, wherein X is O; Y is O; m, n, p and q are 0; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 10 carbon atoms; R<sub>4</sub>, R<sub>5</sub> and R<sub>7</sub> are H; R<sub>8</sub> is phosphono; R<sub>9</sub> is H; and R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration.

12.(currently amended) The ~~compound~~ salt of claim 7, wherein X is O; Y is O; m, p and q are 0; n is 1; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 14 carbons; R<sub>4</sub>, R<sub>5</sub> and R<sub>7</sub> are H; R<sub>8</sub> is phosphono; R<sub>9</sub> is H; and R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration.

13.(currently amended) The ~~compound~~ salt of claim 1, wherein R<sub>6</sub> is hydroxy.


14.(currently amended) The ~~compound~~ salt of claim 13, wherein X is O; Y is O; m, n and q are 0; p is 1; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 12 carbon atoms; R<sub>4</sub> and R<sub>5</sub> are H; R<sub>7</sub> is H; R<sub>8</sub> is phosphono; and R<sub>9</sub> is H; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration; and R<sub>5</sub> is attached to a stereogenic center having an *S* configuration.

15.(currently amended) The ~~compound~~ salt of claim 13, wherein X is O; Y is O; m and q are 0; n and p are 1; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 10 carbon atoms; R<sub>4</sub>, R<sub>5</sub> and R<sub>7</sub> are H; R<sub>8</sub> is phosphono; R<sub>9</sub> is H; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration; and R<sub>5</sub> is attached to a stereogenic center having an *S* configuration.

16.(currently amended) The ~~compound~~ salt of claim 13, wherein X is O; Y is O; m, n and q are 0; p is 2; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 10 carbon

atoms; R<sub>4</sub>, R<sub>5</sub> and R<sub>7</sub> are H; R<sub>8</sub> is phosphono; R<sub>9</sub> is H; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration; and R<sub>5</sub> is attached to a stereogenic center having an *S* configuration.

17.(currently amended) The ~~compound~~ salt of claim 13, wherein X is O; Y is O; m, n and q are 0; p is 1; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 14 carbon atoms; R<sub>4</sub>, R<sub>5</sub> and R<sub>7</sub> are H; R<sub>8</sub> is phosphono; R<sub>9</sub> is H; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration; and R<sub>5</sub> is attached to a stereogenic center having an *R* configuration.

 18.(currently amended) The ~~compound~~ salt of claim 13, wherein X is O; Y is O; m, n and q are 0; p is 1; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 14 carbon atoms; R<sub>4</sub>, R<sub>5</sub> and R<sub>7</sub> are H; R<sub>8</sub> is phosphono; R<sub>9</sub> is H; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration; and R<sub>5</sub> is attached to a stereogenic center having an *S* configuration.

19.(currently amended) The ~~compound~~ salt of claim 13, wherein X is O; Y is O; m, n and q are 0; p is 1; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 11 carbon atoms; R<sub>4</sub>, R<sub>5</sub> and R<sub>7</sub> are H; R<sub>8</sub> is phosphono; R<sub>9</sub> is H; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration; and R<sub>5</sub> is attached to a stereogenic center having an *S* configuration.

20.(currently amended) The ~~compound~~ salt of claim 13, wherein X is O; Y is O; m, n and q are 0; p is 1; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 10 carbon atoms; R<sub>4</sub>, R<sub>5</sub> and R<sub>7</sub> are H; R<sub>8</sub> is phosphono; R<sub>9</sub> is H; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration; and R<sub>5</sub> is attached to a stereogenic center having an *S* configuration.

21.(currently amended) The ~~compound~~ salt of claim 1, wherein X is O; Y is O; m, n, p and q are 0; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are normal fatty acyl residues having 10 carbon atoms; R<sub>4</sub> and R<sub>5</sub> are H; R<sub>6</sub> is amino carbonyl; R<sub>7</sub> is H; R<sub>8</sub> is phosphono; and R<sub>9</sub> is H; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each attached to a stereogenic center having an *R* configuration; and R<sub>5</sub> is attached to a stereogenic center having an *S* configuration.

22.(currently amended) The ~~compound~~ salt of claim 1, wherein R<sub>1</sub> is hydrogen.

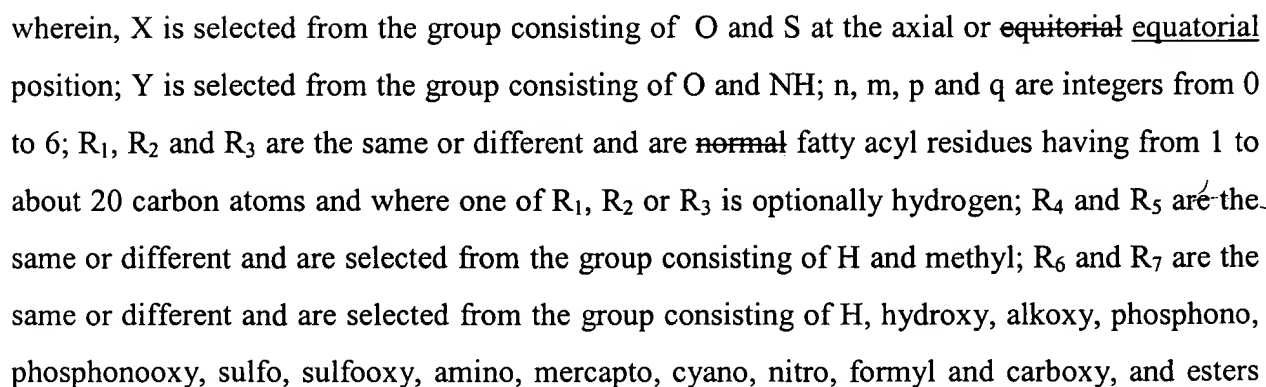
23.(currently amended) The ~~compound~~ salt of claim 1, wherein R<sub>2</sub> is hydrogen.

24.(currently amended) The ~~compound~~ salt of claim 1, wherein R<sub>3</sub> is hydrogen.

25.(currently amended) A method for enhancing the immune response of a mammal comprising administering to the mammal an effective amount of a ~~compound~~ salt of claim 1.

26.(currently amended) A vaccine composition comprising a ~~compound~~ salt of claim 1, an antigen and a suitable carrier.

27.(currently amended) A pharmaceutical composition comprising a pharmaceutically acceptable salt of a compound of claim 1 having the formula:



and amides thereof; and R<sub>8</sub> and R<sub>9</sub> are the same or different and are selected from the group consisting of phosphono and H, and at least one of R<sub>8</sub> and R<sub>9</sub> is phosphono;  
and a pharmaceutically acceptable carrier.

28.(original) The composition of claim 27, wherein said pharmaceutically acceptable carrier is an aqueous composition comprising water and one or more surfactants selected from the group consisting of glycodeoxycholate, deoxycholate, sphingomyelin, sphingosine, phosphatidylcholine, 1,2-Dimyristoyl-sn-glycero-3-phosphoethanolamine, L- $\alpha$ -Phosphatidylethanolamine, and 1,2-Dipalmitoyl-sn-glycero-3-phosphocholine, or a mixture thereof.

29.(original) The composition of claim 28, wherein said one or more surfactant is 1,2-Dipalmitoyl-sn-glycero-3-phosphocholine.

30.(currently amended) The composition of claim 28, wherein the molar ratio of said ~~compound~~ salt to surfactant is from about 10:1 to about 1:25.

31.(currently amended) The composition of claim 28, wherein the molar ratio of said ~~compound~~ salt to surfactant is from about 4:1 to about 1:9.

32.(original) The composition of claim 27, wherein said carrier is a stable emulsion comprising a metabolizable oil, one or more surfactants, an antioxidant and a component to make the emulsion isotonic.

33.(original) The composition of claim 32, wherein said stable emulsion comprises 1-10% v/v squalene, 0.9% w/v PLURONIC-F68 block co-polymer, 1.9% w/v egg phosphatidyl choline, 1.75% v/v glycerol and 0.05% w/v  $\alpha$  tocopherol.



34.(original) The composition of claim 27 wherein said carrier is a suspension comprising aluminum hydroxide, calcium hydroxide, calcium phosphate or tyrosine adsorbate.

35.(original) The composition of claim 27 wherein said carrier is an aqueous solution or aqueous micellar dispersion comprising triethylamine or triethanolamine.

36.(currently amended) The composition of claim 27 wherein said carrier comprises microspheres or microparticles, and the compound of claim 1 is within the matrix of the microspheres or microparticles or adsorbed thereon.

37. (new) The salt of claim 1 wherein  $R_1$ ,  $R_2$  and  $R_3$  are normal fatty acyl residues.

38. (new) The salt of claim 37 wherein  $R_1$ ,  $R_2$  and  $R_3$  are normal  $C_6$  fatty acyl residues.

39. (new) The salt of claim 38 wherein  $R_6$  is carboxy.

40. (new) The salt of claim 37 wherein at least one of  $R_1$ ,  $R_2$  and  $R_3$  is a normal  $C_6$  fatty acyl residue and at least one other of  $R_1$ ,  $R_2$  and  $R_3$  is a normal  $C_{10}$  fatty acyl residue.

41. (new) The salt of claim 40 wherein  $R_1$ ,  $R_2$  and  $R_3$  are all selected from the group consisting of normal  $C_6$  fatty acyl residues and normal  $C_{10}$  fatty acyl residues.

42. (new) The salt of claim 41 wherein  $R_6$  is carboxy.

43. (new) The salt of claim 37 wherein  $R_1$ ,  $R_2$  and  $R_3$  are normal  $C_{10}$  fatty acyl residues.

44 (new) The salt of claim 43 wherein  $R_6$  is carboxy.

45. (new) The salt of claim 37 wherein  $R_1$ ,  $R_2$  and  $R_3$  are normal  $C_{14}$  fatty acyl residues.

46. (new) The salt of claim 45 wherein  $R_6$  is carboxy.

47. (new) The salt of claim 2 wherein X is O; Y is O; n, m, p and q are 0;  $R_1$ ,  $R_2$  and  $R_3$  are normal fatty acyl residues having 6 carbon atoms;  $R_4$ ,  $R_5$  and  $R_7$  are H;  $R_8$  is phosphono;  $R_9$  is H;  $R_1$ ,  $R_2$  and  $R_3$  are each attached to a stereogenic center having an *R* configuration; and  $R_5$  is attached to a stereogenic center having an *S* configuration.

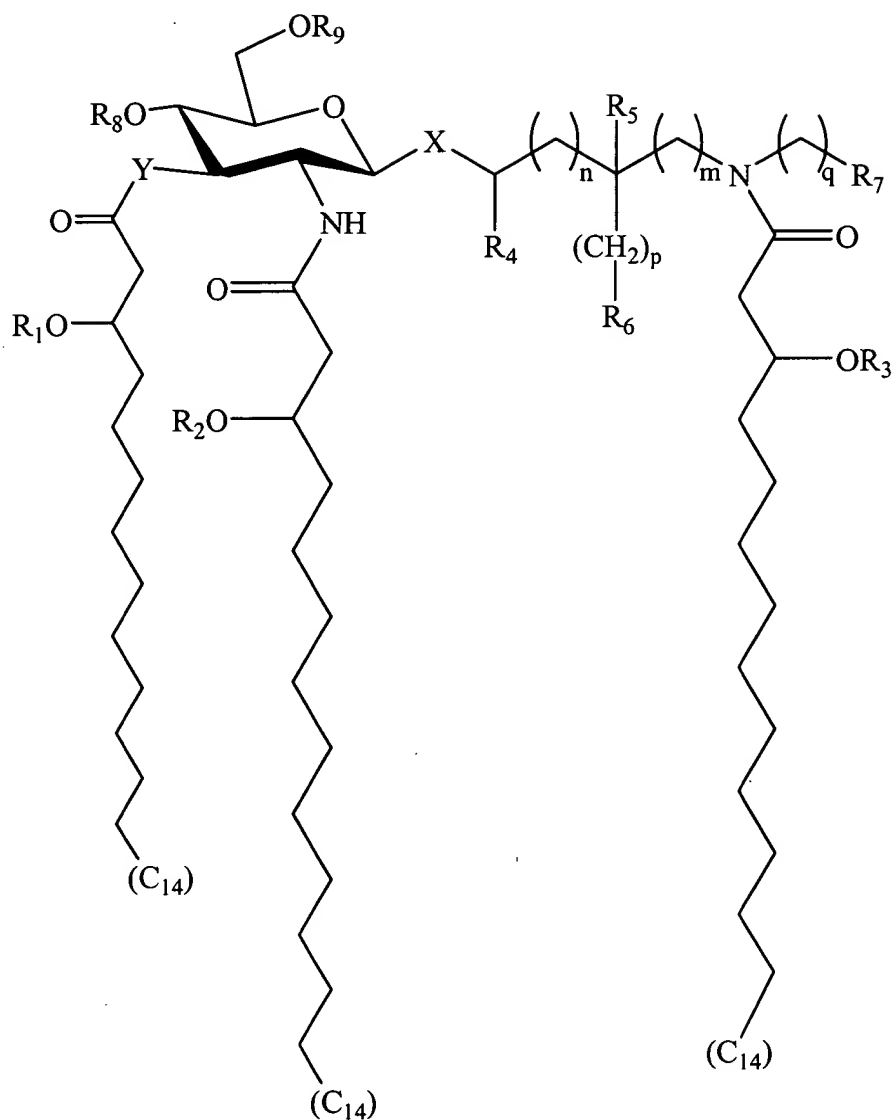
48. (new) The salt of claim 1 wherein said salt is a lyophilized salt.

49. (new) The salt of claim 1 wherein said salt is a triethylammonium salt.

50. (new) The composition of claim 27 wherein said composition is a solid composition.

51. (new) The composition of claim 27 wherein the carrier is a solid carrier.

52. (new) A solid composition comprising a compound having the formula:



wherein, X is selected from the group consisting of O and S at the axial or ~~equatorial~~ equatorial position; Y is selected from the group consisting of O and NH; n, m, p and q are integers from 0 to 6; R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are the same or different and are ~~normal~~ fatty acyl residues having from 1 to about 20 carbon atoms and where one of R<sub>1</sub>, R<sub>2</sub> or R<sub>3</sub> is optionally hydrogen; R<sub>4</sub> and R<sub>5</sub> are the same or different and are selected from the group consisting of H and methyl; R<sub>6</sub> and R<sub>7</sub> are the same or different and are selected from the group consisting of H, hydroxy, alkoxy, phosphono,

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Amdt. dated July 11, 2003  
Reply to Office Action of March 24, 2003

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phosphonooxy, sulfo, sulfooxy, amino, mercapto, cyano, nitro, formyl and carboxy, and esters and amides thereof; and  $R_8$  and  $R_9$  are the same or different and are selected from the group consisting of phosphono and H, and at least one of  $R_8$  and  $R_9$  is phosphono; and a pharmaceutically acceptable carrier.

*Booncl'd*  
carrier.

53. (new)

A composition according to claim 52 in which the carrier is a solid